

AMENDMENT AND RESPONSE

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Serial No.: 09/826,246

Filing Date: April 4, 2001

Attorney Docket No. 100.169US01

Title: FILTER STRUCTURE INCLUDING CIRCUIT BOARD

REMARKS

Applicant has reviewed the Office Action mailed on March 31, 2003 as well as the art cited therein. Claims 1, 6, 7, 9, 13-16, 37, 40, 41, 45, and 47-50 are currently pending in the application.

Election/Restriction

The Office Action acknowledged Applicant's election in Paper No. 7.

Claim Objections

Claims 9, 13, 14, 45, 47, 48, and 50 were objected to because of informalities.

The Office Action took the position that, in claims 9, 13, 14, 45, 47, and 48, it appears that the phrase "the at least one cavity" would be more clear if it read as --one of the at least one cavity-- since the phrase "at least one cavity" can include a plurality of cavities and the connector is coupled to one of the plurality of cavities (as shown in FIG. 6).

The claims have been amended to address this objection.

The Office Action took the position that, in claim 50 (line 3), it appears that the phrase "in a surface" should read --on a surface-- since the signal trace is on a surface of the circuit board as shown in the elected FIG. 6.

Applicant respectfully traverses this objection. Claim 50, in relevant part, recites "forming the signal trace in a surface circuit layer of the circuit board." Applicant respectfully submits that the Office Action is improperly quoting the relevant part of claim 50.

Based on the foregoing, Applicant respectfully requests that these objections be withdrawn.

Rejections Under 35 U.S.C. § 112

Claims 14-16 were rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. Claims 14-16 have been amended to address this rejection.

Accordingly, Applicant respectfully requests that this rejection be withdrawn.

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Rejections Under 35 U.S.C. § 102

Claims 1, 9, and 14-16 were rejected under 35 USC § 102(b) as being anticipated by Satoh et al. (U.S. Patent No. 5,714,919) (referred to here as "Satoh").

Applicant respectfully traverses this rejection. Satoh fails to disclose every feature set forth in claims 1, 9, and 14-16. For example, amended claim 1 of the present application recites, in part, "an enclosure having a cavity" and "at least one wall of the enclosure comprised of a circuit board." Claims 9 and 14-16 depend from claim 1.

The Office Action took the position that "Satoh et al. (Figs. 1-2) teaches a filter including a plurality of cavities (101a, 101b, etc.); [and] a dielectric board [that] forms one wall of the cavities and has transmission lines (106a, 108a, 108b, etc.) on the board (i.e. traces on a circuit board) (see Col. 7 (lines 60-65) and Col. 10 (lines 34-36 and 45-50))."

Applicant respectfully traverses this assertion. Satoh simply does not teach "a dielectric board [that] forms one wall of the cavities." Satoh characterizes the cavities 101a, 101b, etc. as "a box-type metal cavities 101a, 101b, 101c, 101d and 101e." See, e.g., Satoh, column 6, lines 63-64. The portions of Satoh cited in the Office Action are completely silent as to "a dielectric board [that] forms one wall of the cavities." See also, for example, Satoh, FIGS. 13 and 18 and the Present Application, paragraph 0005.

Based on the foregoing, Applicant respectfully requests that this rejection be withdrawn.

Rejections Under 35 U.S.C. § 103

Claims 6-7, 37, 40, 41, 45, and 48-50 were rejected under 35 USC § 103(a) as being unpatentable over Satoh et al. (U.S. Patent No. '919) in combination with Piloto et al. (U.S. Patent No. 5,382,931) (referred to here as "Piloto") and Newell et al. (U.S. Patent No. 5,406,236) (referred to here as "Newell").

The Office Action takes the position that Satoh teaches a filter for the same reasons given in the Office Action for claims 1, 9, and 14-16. The Office Action conceded that Satoh does not teach a power amplifier that is coupled to a trace. The Office Action asserts that Piloto teaches a waveguide filter which includes dielectric circuit boards on the top of the filter for mounting circuit components such as power components and signal lines. Moreover, the Office Action took the position that Newell teaches using power amplifiers in combination with filters.

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The Office Action concluded that it would have been "obvious to one of ordinary skill in the art to have included additional dielectric circuit board material on the top side of circuit board of the filter (such as taught by Piloto et al.) in the Satoh filter and to have included a power amplifier (such as taught by Newell) on the top side of the circuit board connected to the input and or output of the filter transmission line (108 of Satoh), because amplifying filter signals is well-known for providing a useful signal level to a transmitter or from a receiver, and the addition of the dielectric material would have provided the advantageous benefit of additional surface area for mounting additional circuitry including the power amplifier taught by Newell, thereby suggesting the obviousness of such modifications."

Applicant traverses this rejection. The assertion that "Satoh et al. teaches a filter" is incorrect for at least the reasons given above with respect to claims 1, 9, and 14-16.

Furthermore, Applicant respectfully traverses the assertion that Piloto teaches a "waveguide filter which includes dielectric circuit boards on the top of the filter for mounting circuit components." Piloto indicates that "The stacking of the dielectric layers 30 forms the body of a waveguide filter 10." Piloto, column 5, lines 33-34 and FIG. 1. Piloto does not teach "dielectric circuit boards on the top of the filter" as asserted in the Office Action.

Moreover, Applicant respectfully submits that the proposed combination is improper. Piloto indicates that:

The present invention is based upon the well-known principle that the linear dimension of a waveguide filter having a solid body with a relative dielectric constant ϵ_r will be less than the linear dimension of a known waveguide filter having an air-filled body by a factor of $(1/\epsilon_r)^{1/2}$ when resonating at the same frequency.

Piloto, column 3, lines 32-37. Piloto also states:

One proposed technique has significantly reduced the size of dual mode waveguide filters by inserting a temperature stable ceramic material having a high dielectric constant and high quality factor into the cavities previously filled with air. This reduction resulted from the fact that the linear dimensions of a waveguide filter are inversely proportional to the square root of the effective relative dielectric constant within the waveguide.

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Piloto, column 1, lines 46-54. In other words, Piloto teaches away from the proposed combination (namely, the use of a cavity). See also, Newell, Title ("Ceramic block filter having nonsymmetrical input and output impedances and combined radio communication apparatus") and Abstract.

Based on the foregoing, Applicant respectfully requests that this rejection be withdrawn.

Allowable Subject Matter

Claims 13 and 47 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

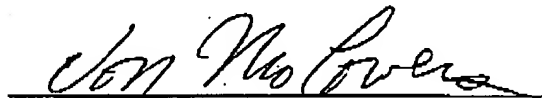
CONCLUSION

Applicant respectfully submits that claims 1, 6, 7, 9, 13-16, 37, 40, 41, 45, and 47-50 are in condition for allowance and notification to that effect is earnestly requested. If necessary, please charge any additional fees or credit overpayments to Deposit Account No. 502432.

If the Examiner has any questions or concerns regarding this application, please contact the undersigned at (612) 332-4720.

Respectfully submitted,

Date:

6/30/2003

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